



Effect of Nitrogen Stabilizing and Potassium and Phosphorus Solubilizing Bacteria on Mung bean (*Vigna radiata* L.) Yield

Afsaneh Yousefi¹, Reza Mirzaeitalarposhti¹, Jafar Nabati², Saeid Soufizadeh¹

¹Shahid Beheshti University, Environmental Science Research Institute, Iran

²Ferdowsi University, Plant Production Institute, Iran

Introduction

Nowadays, nutrition of crops based on soil nutrition and its health is one of the agricultural activities needed to achieve sustainable agriculture. Therefore, one of the stages of the transition from modern agricultural to sustainable agriculture is with replaceable operations that have less adverse effects in the environment. Biological fertilizers as an alternative to chemical fertilizers in sustainable agriculture can improve the quantitative and qualitative yield of crops. The purpose of this research was assessment of using bio-fertilizers on mung bean yield.

Methods and Materials

A field experiment was carried out using a randomized complete block with factorial treatment structure. Two mungbean (*Vigna radiata* L.) genotypes (Dezfouli & Indian) were cultivated in six treatments and three replications. The biofertiliser treatments used in this study included: 1) nitro bacter (NB) 2) phosphate power bacter (PhPB) 3) potassium power bacter (PPB) 4) nitro bacter+ phosphate power bacter+ potassium power bacter 5) nitrogen fertilizer (CF) 6) control (C) without any fertilizer. At the end of the growing season, an area of 1 m² from middle of each plot was harvested, grain yield & biological yield were measured.



Figure1. Field preparation, planting and harvesting

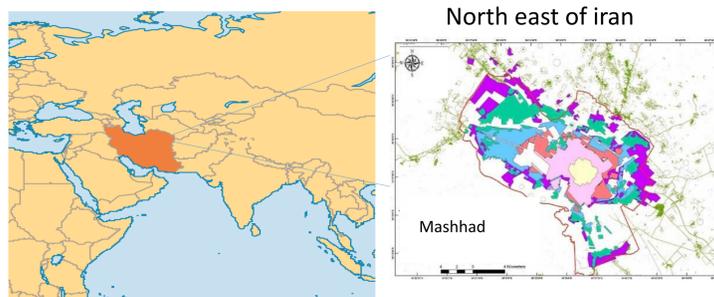


Figure2. The location of study site

Results

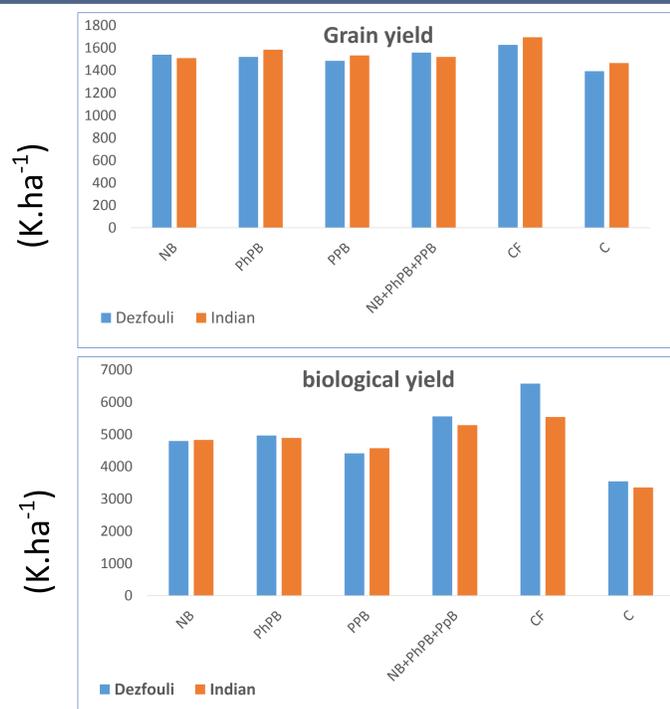
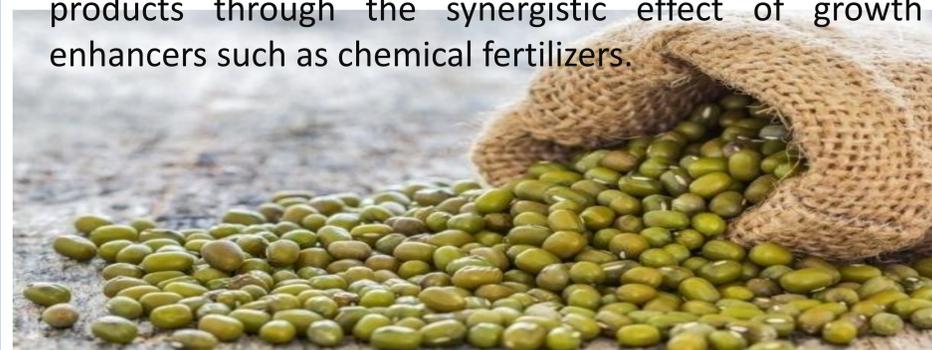


Figure3. Grain yield and biological yield under the influence of biological and non-biological fertilizers and genotype

Conclusions

- The highest biomass and grain yield was obtained for Dezfouli genotype in NPB+PhPB+PPB bacteria-integrated treatment with an average of 6555 and 1558 kg.ha⁻¹. The lowest amount was observed for Indian genotype in control treatment with an average of 3518 and 1393 kg.ha⁻¹.
- Application of biofertilizers, due to the effects on growth and development, can increase the yield of mash products through the synergistic effect of growth enhancers such as chemical fertilizers.



Contact

Address: Afsaneh Yousefi, Shahid Beheshti University, Environmental Science Research Institute, Tehran, Iran, e-mail: yousefi.afs@gmail.com

References

- Etesami, H. and Maheshwari, D., 2018. Use of plant growth promoting rhizobacteria (PGPRs) with multiple plant growth promoting traits in stress agriculture: Action mechanisms and future prospects. *Journal of Ecotoxicology and Environmental Safety*, 156, 225-246.
- Iqbal, S., Khan, M.Y., Asghar, H.N. and Akhtar, M.J., 2016. Combined use of phosphate solubilizing bacteria and poultry manure to enhance the growth and yield of mung bean in calcareous soil. *Journal of Soil Environment*, 35(2), 146-15.
- Rany, M. and Praksh, V., 2017. Effect of phosphorus, sulphur and PSB on growth attributes and yield of Mungbean (*Vigna radiata* L.). *Journal of Agriculture Search*, 4(3), 198-201.